IN THE DRAWINGS

Replacement Sheets for Figs. 3, 4, 6-12, 14, and 16 are submitted herewith, with a Submission of Proposed Drawing Amendments.

REMARKS

Reconsideration and allowance of this application are respectfully requested in light of the above amendments and the following remarks.

Figs. 3, 4, 6-12, 14, and 16 have been amended to overcome the objections thereto. The amendments of the drawings also overcome the objections to claims 1-6.

The specification has been amended to overcome the objections thereto. No new matter is believed to be introduced by the amendments to the specification.

Claim 1 has been amended, and claim 9 has been newly added. Support for the subject matter of the amended claims is provided at least in Figs. 4 and 7 and embodiments 1-4 and 8 of the invention described in the specification.

Claims 1, 2, 7, and 8 were rejected, under 35 USC § 103(a), as being unpatentable over Applicants' Description of the Related Art in view of Okubo et al. (US 5,264,807). Claims 3 and 6 were rejected, under 35 USC § 103(a), as being unpatentable over the Applicants' Description of the Related Art in view of Okubo and Moriyama et al. (US 5,903,823). Claim 4 was rejected, under 35 USC § 103(a), as being unpatentable over the Applicants' Description of the Related Art in view of Okubo, "How to Select a Mixer," "Understanding Mixers," and "Modern Mixer Terms Defined." Claim 5 was rejected, under 35 USC § 103(a), as being unpatentable over the Applicants' Description of the Related Art in view of Okubo, "How to Select a Mixer," "Understanding Mixers," "Modern Mixer Terms Defined," and Daniel et al. (US 4,243,955). To the extent these rejections may be deemed applicable to the amended claims, the Applicants respectfully traverse.

Claim 1 now defines an amplifier circuit having: (1) a frequency conversion section that frequency-converts first and second constant-envelope signals using first and second local signals, respectively; (2) a local signal phase-shifting section that rotates phases of the first and second local signals before the frequency-conversion, so that the first and second local signals after the rotation have a 180° phase difference; and (3) a constant-envelope signal phase-shifting section that rotates a phase of the first constant-envelope signal before the frequency-conversion, by the same amount as the rotation of the first local signal and in an opposite direction to the rotation of the first local signal, and rotates a phase of the second constant-envelope signal before the frequency conversion, by the same amount as the rotation of the second local signal and in an opposite direction to the rotation of the second local signal. The claimed subject matter supports the ability to cancel the local oscillator signals that leak through the frequency conversion section and harm the communication quality of the signal to be amplified by the amplifier circuit (see specification page 4, lines 13-17, and page 15, lines 16-27). More specifically, the claimed local signal phase-shifting sections shifts the first and second local oscillator signals to have a 180° phase difference so that when the leakage signals from the first and second oscillators are subsequently combined by a combining circuit, the two leakage signals cancel one another out due to their 180° phase difference (see and 15, lines 16-27).

The Office Action acknowledges that the Applicants' Description of the Related Art does not disclose shifting first and second local oscillator signals, which are used to frequency convert desired signals, to have a 180° phase difference (see Office Action section 9, lines 1-2). To overcome this deficiency, the Office Action proposes that Okubo teaches this feature (see section 9, lines 3-5).

However, the Office Action does not cite a motivation or suggestion to combine Okubo's teachings with those of the Applicants' Description of the Related Art. More specifically, the Office Action does not identify why a skilled artisan would find motivation to modify the amplifier circuit disclosed in the Applicants' Description of the Related Art so as to include the phase shifter disclosed by Okubo.

Instead, the Office Action merely proposes that Okubo discloses one component for performing the phase shifting, whereas Applicants' Fig. 4 illustrates two components for performing the phase shifting (see section 10, lines 1-3). Continuing, the Office Action proposes that a skilled artisan would recognize the benefit of combining the operation of two phase shifters into a single phase shift component (see section 10, lines 3-8).

However, the cited motivation to combine the operations of two phase shift components into a single phase shift component does not provide a motivation to modify the amplifier circuit disclosed in the Applicants' Description of the Related Art to include a component that phase shifts a local oscillator signal used to frequency convert desired signals. Thus, the Office Action fails to establish a *prima facie* case of obviousness in the rejection of claim 1.

Moreover, claim 1 now recites a constant-envelope signal phase-shifting section that: (1) rotates a phase of a first constant-envelope signal before its frequency-conversion, by the same amount as the rotation of a first local signal used for the frequency conversion and in an opposite direction to the rotation of the first local signal and (2) rotates a phase of a second constant-envelope signal before its frequency conversion, by the same amount as the rotation of a second local signal used for the frequency conversion of the second constant-envelope signal and in an opposite direction to the rotation of the second local signal. In the exemplary, but non-limiting

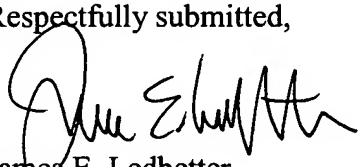
embodiment, of the claimed subject matter illustrated in Fig. 4, the combined components of phase shifter 102a and phase shifter 102b correspond to the claimed constant-envelope signal phase-shifting section. Neither the Applicants' Description of the Related Art nor Okubo discloses such a phase shifter or its functionality.

Accordingly, the Applicants submit that the teachings of the Applicants' Description of the Related Art and Okubo, considered individually or in combination, do not render obvious the subject matter now defined by claim 1. New claim 9 distinguishes over the Applicants' Description of the Related Art and Okubo for similar reasons. Therefore, the rejections applied to claims 3-6 are obviated and allowance of claims 1 and 9 and all claims dependent therefrom is warranted.

In view of the above, it is submitted that this application is in condition for allowance and a notice to that effect is respectfully solicited.

If any issues remain which may best be resolved through a telephone communication, the Examiner is requested to telephone the undersigned at the local Washington, D.C. telephone number listed below.

Respectfully submitted,



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